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ABSTRACT

Culminating a 6-month assessment effort by Control Data Corporation's (CDC) Engineering Management Operations (EMO), the report was prepared to help meet the Department of Agriculture's need for an assessment of (1) rural health care services research as a whole and (2) the knowledge contained in that research. The CDC "Final Report" was presented in a large volume in order to make the entire data base available for different policy uses, assessment methodological applications, and further discussions. Prepared by EMO after the completion of the Final Report, this executive summary further explains the presumptions, assumptions, methodologies, conclusions, and recommendations of that report. Policy-relevant findings of the assessment are summarized and clarified by: (1) presenting the models and objectives (values) used in the systems approach which produced the Final Report's recommendations; and (2) demonstrating a potential systems approach to the utilization of the Final Report's data base elements toward the goal of achieving a comprehensive knowledge assessment. The accepted research publications are categorized by: (1) indepth subject category and (2) document access number. (NQ)

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Executive Summary
Assessment of Rural Health Research
Contract Number 12-01-01-5-510 Task Order 2

[1975]

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Introduction

The Assessment of Rural Health Research, Final Report, {Final Report} culiminated a modest six month assessment effort by Control Data Corporation's {CDC's} Engineering Management Operations {EMO} for the United States Department of Agriculture's Office of Planning & Evaluation {OPE} to help meet the Department's need for an assessment of rural health care services research as a whole and an assessment of the knowledge contained in that research. This need was mandated by Sections 104, 118 and 603 of the Rural Development Act of 1972, which respectively:

- Authorized loans to rural communities for development of essential community facilities {including health facilities}.
- Authorized loans to private entrepreneurs for the establishment of business or industrial enterprises {including health facilities}.
- Authorized and directed the Secretary of Agriculture to coordinate the various Federal rural development programs {including rural development research of which rural health is a component}.

Section 603 requirements were delegated to the Under Secretary of Rural Development and portions further delegated to the Rural Development Service {RDS}.

The CDC Final Report was presented in a large volume in order to make the entire data base available for different policy uses, different assessment methodological applications and further discussions. The Final Report will be available shortly through the NTIS and possibly the ERIC technical information systems. This Executive Summary was prepared by EMO after the completion of the Final Report. It was prompted by the perceived need to further explain the presumptions, assumptions, methodologies, conclusions and recommendations of that Final Report. It will summarize and clarify policy-relevant findings of the assessment by:

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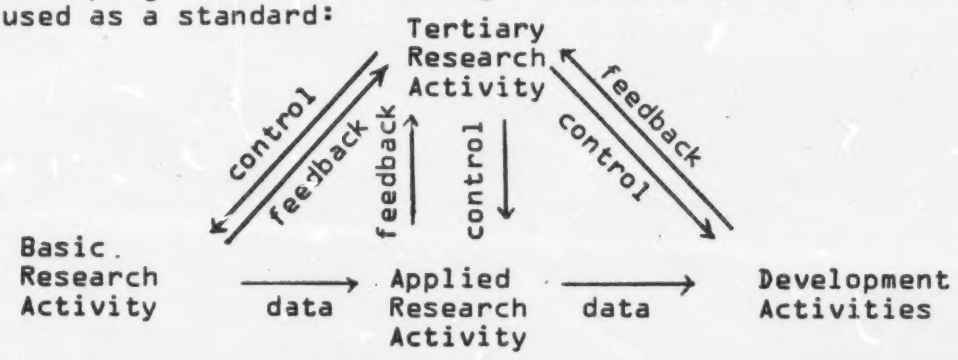
- Presenting the models and objectives {values} used in the systems approach which produced the recommendations of the Final Report {Section 12}.

- Demonstrating a potential systems approach to the utilization of the data base elements of the Final Report toward the goal of achieving a comprehensive knowledge assessment. Such an effort ideally would be institutionalized.

The Systems Approach to Research

This systems approach to research is referred to hereafter as "tertiary research." "Tertiary research" denotes the monitoring, collecting, classifying and aggregating of basic and applied research documents as well as development documents.* In systems terminology, this tertiary research would be synonymous to a formalized feedback network controlled by definitive policy goals and/or knowledge needs. This approach should ideally be used in administering and planning any sizeable research and development program by the administrative body in control of the allocation of research funds.

Conceptually this "tertiary research" is integrated into a "social action" policy planning process, impacting the three levels of creative policy planning as described by Erich Jantsch — the normative {the "ought"}, strategic {the "can"} and the operational {the "will"}.** In assessing the rural health care research programs, the following research and development model was used as a standard:



* This assessment study would be classified as tertiary research, but of a preliminary nature. This will be discussed further later.

** "Social Action" concept as described in the Final Report pages 2-4 and 5-1 corresponds roughly to Erich Jantsch's "rational creative action" {"From Forecasting & Planning to Policy Sciences", Policy Sciences 1 {1970}, 31-47.}

Specifically the ideal "tertiary research" activity is composed of the following:

- o a "normative" policy expressing the "oughts" or specific values which reflect directly on the problems, here the rural health problems. This would include "normative" statements on the desired quality of rural health and possible rural health services models to attain such a level,
- o a technical information system, which collects, classifies and aggregates research and development documents producing policy inputs and receiving policy feedback,
- o a Management Information System, which collects research administration data on ongoing and past research and development activities.

NASA's research and development program is an example of such a "tertiary research" program. In NASA's tertiary research mechanism its Scientific and Technical Information Facility performs the function of a Technical Information system. This "tertiary research" concept is described further in the final section of this summary.

Limitations Affecting Design & Data of Study

The assessment "system" was limited and thus its design and data affected by the following factors:

- o limited assessment resource funding by USDA.
- o limited time.
- o fragmentation/scattering of rural health research (final reports and publications) among countless periodicals, technical information systems, and the strong prospect that a majority of research is not disseminated in periodicals or technical information systems.
- o lack of a structured USDA (or DHEW) rural health "normative" policy and thus specific rural health policy needs and non needs.
- o a vacuum of research methodologies heretofore for a "knowledge assessment" of rural health research.

To deal with the first three limitations (resources, time and fragmentation/scattering of the research) several trade-offs were jointly planned and approved by EMO, OPE and several knowledgeable individuals in other USDA agencies. These trade-offs are presented in the Final Report and the reader is referred to

Section 2, page 2-3 to 2-12 of that report. Summarily they were: limiting the search to documents which were available in the District of Columbia area information systems and limiting the research site to within the United States and its territories, and limiting the documents' publishing date to post-December 31, 1969. Originally only publications from completed research or completed significant substages of research were to be surveyed. However during the assessment effort it was decided by CDC and OPE to include a limited assessment of ongoing research to provide a more complete view of the rural health care situation.

Regarding the fourth limitation (lack of structured USDA rural health policy and thus specific policy knowledge needs), EMO conducted a two part task to fill this void. This further defined and refined the objectives of the study and indicated tentative policy knowledge needs (see Section 2, pages 2-1 to 2-2).

The first part of this task was an informal interviewing of several key public sector (USDA & DHEW) and private sector people related to or responsible for rural health care service(s). The consensus of this informal interviewing was that the assessment effort would be useful if it:

- o Inventoried (listed) research of rural health care services,
- o Identified problem-oriented research of depth and quality for use to decision-makers, i.e., research in which alternative courses of action are compared in terms of desired outcomes, subject to the constraints of resources and value preferences,
- o Evaluated this problem-oriented research as to quality.

This informal interviewing also brought forward two hypotheses to be discussed later.

The second part of this task was a review of pending Congressional legislation relevant to rural health administrative actions and relevant to rural health agency actions. Three general national health goals were derived; they are improvement of access, assurance of quality and containment of costs. The results of this two-part effort were used to mitigate the limiting effects of unstructured USDA rural health policy and thus define the knowledge needs that may be of use when USDA does formulate such a structured rural health policy.

The last limitation deserves more explanation. In the history of health services research, no convention of tools, characteristics and procedures has been formulated to be used in a so-called "knowledge assessment" of health care services

or the subcomponent rural health care services. Health Services Research and R&D in Perspective edited by E.E. Flook and P.J. Sanazaro cites this problem and presents the precursers of such a convention. Any "ideal" knowledge assessment would involve aggregating the data elements in the research documents identified and comparing these aggregated data elements with models of the "ideal" rural health care services delivery system components. Such an "ideal" knowledge assessment is beyond the current "state of the art" of rural health care services methodologies because of a lack of health services research aggregating methodologies.

Consequently the fifth limitation {a vacuum of "knowledge assessment" rural health services methodologies}-was handled by surveying what methodologies existed and formulating a knowledge assessment aggregating framework from data elements of relevant papers. These papers were identified through an independent literature search without publishing date limitations, i.e., pre-1970 papers were included.* This knowledge assessment framework and a demonstration of its utilization will be presented later in this summary by applying a model of an "ideal" rural health care services delivery system.

These five limitations led to recommendations 1, 4 and 6 presented in Final Report, Section 12.

Recommendation 1} "The creation of a comprehensive rural health policy with a supporting, i.e., complementary rural health care management information system and evaluation techniques." More specifically this system would be both a management information system and a technical information system.

Recommendation 4} "The need for applied research into a method of aggregating the results of rural health care services research into a structured scientific model of the existing rural health care services system".

Recommendation 6} "The need to explain to researchers the importance of disseminating their research publications [and especially final reports] to the national information systems or to a rural health care services management information system, i.e., increase the 'social action' consciousness of rural health care services researchers."

These recommendations as well as others will be reinforced later in this summary.

Definitions

This assessment study concentrated on "problem-oriented" research. To do this two series of classifications were

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* See attached bibliography of these papers.

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established to reflect the attributes of a specific research study which may increase its usefulness as input into the further understanding of and/or the improvement of rural health services. The first series, research type, is based on the specific research's stated or implied objective(s) and is either Sociomedical (SM) or Research and Development (R&D) (See pages 2-4 to 2-5). In a simplistic sense, the basic difference between SM and R&D is the time frame in which change can be expected. The R&D studies are concerned with improvements which can be implemented in the short run while the SM studies are concerned with long-range plans and policies.

The second series, outcome type, is based on the specific research's conclusions and results and is either Fact Description (FD), Problem Analysis (PA), Recommendation (R) or Other (O). Each relevant study is classified by research type and outcome type. Thus these series combine the strict conventional conceptions of "research" with those of "development". In the resulting classification spectrum interfaces between research and development activities are less distinct but functionally more indicative of that activity's social action orientation.

However the relationship between this classification system and the conventional conceptions of research and development must be specified not only to communicate the findings more universally but to provide a framework to compare rural health care services and development with research and development efforts in other areas, e.g., the life sciences. This transformation is done visually using the abbreviations presented above.

SM/FD R&D/FD	}	Basic Research
SM/PA SM/R	}	Applied Research
R&D/PA R&D/R	}	Development

It should be noted that documents classified as SM/O and R&D/O are in the strictest sense not research or development. These categories were included to meet the contractor's wish for documented analytical essays and as an overflow classification for miscellaneous but interesting documents.

Basic Research (SM/FD, R&D/FD) "is concerned with exploration of the unknown. It is primarily motivated by the desire to pursue knowledge for its own sake. As such, it is free from the need to meet immediate objectives, but is undertaken to increase the understanding of natural laws. This kind of knowledge discovered through basic research forms a groundwork for subsequent applications, which produce economic growth and material progress and

can lead to improvements in social conditions"*

Applied Research {SM/PA, SM/R} "is concerned with funding the means for meeting a recognized need. It draws upon the general principles established by basic research investigations and in turn creates additional knowledge. It differs from basic research in that it is oriented toward practical applications rather than toward investigation for its own sake. In the course of applied research activity the first pilot steps may be taken to reduce an abstract idea to a useful purpose, frequently as a forerunner to development."**

Development {R&D/PA, R&D/R} "is the systematic use of knowledge and understanding gained from research and directed to the production of useful materials, devices, systems and methods; such work includes the design, testing and improvement of prototypes and processes. Development is directed to generally predictable and very specific ends, and because such work results so often in tangible products, it can be readily associated with distinct national goals."*** In the case of rural health care services research and development such national goals might be equality of access, assurance of quality and containment of costs.

Assessment of Rural Health Care Research - Overview Findings

Only federally funded activity will be addressed here because of its pragmatic policy relevancy. Of 321 documents {periodical articles and final reports} which met all screening criteria, 47 are "other" outcome types leaving 274 which are strictly research and development documents. Note the funding source distribution of these 274 documents.

Funding	Basic Research whole	% partial	Applied Research whole	% partial	Development whole	partial
Federal Government	52.5	40.8	44.8	41.2	67.5	41.2
Regional Government	3.8	14.8	1.3	5.9	4.1	11.7
State Government	12.5	18.5	21.0	11.7	4.1	11.7
Local Government	-	3.7	2.6	-	2.0	11.7
Educational Institutions	10.0	18.5	13.0	23.6	10.0	6.0
Private {Associations, Businesses, Foundations & Funds	2.5	13.7	7.9	17.6	2.0	11.7
Other	18.7	-	7.2	-	10.0	6.0

*Federal Funds for Research, Development and Other Activities, Volume XVIII, NSF, Washington, D.C., 1969, page 10.
**Ibid, page 14
***Ibid, page 19

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The federal government, basically DHEW, USDA and OEO, dominates "basic and applied research" and, as expected, especially dominates "development". Overall 143 or 52.2% of the strictly research and development documents are federally funded wholly or partially. This domination is reinforced by observing that "Regional Government" includes Regional Medical Programs (RMP), Comprehensive Health Planning (CHP) and other federally supported planning and implementation groups.

The basic, applied and development distribution of federally funded research and development is as follows:

	No.	%
Development	45	31.5
Applied	47	32.8
Basic	51	35.7
	143	100

The geographic scope of this federally funded activity, that is the site to which it was addressed, is as follows:

Geographic Scope	Basic Research		Applied Research		Development	
	No.	%	No.	%	No.	%
National	9	17.7	13	27.8	8	17.8
Regional	7	13.7	6	12.8	3	6.7
State	4	8.0	12	25.4	9	20.0
Local	31	60.6	16	34.0	25	55.5
	51	100	47	100	45	100

As mentioned previously, the informal interviewing activities set forth two hypotheses. The hypotheses are:

1) Basic research substantiating deficiencies in rural health care services research is abundant.

2) Applied research into the operating relationships of the rural health care services "system" and about alternative operating improvements for decision making is lacking. Thus design, testing and improvement of prototypes and processes ("development" in the present terminology) would be included in this category.

The assessment effort experience substantiates these hypotheses.

For example, consider that the Cooperative State Research Service (CSRS) is representative of USDA rural health care services research funding authority and the Health Services and Mental Health Administration (HSMHA) is representative of DHEW

rural health care services research funding authority. Then the total and social sciences subtotal budgetary obligations for fiscal 1970 {"social sciences" because of its disciplinarian domination of rural health care services research} in thousands of dollars is as follows:

	Basic Research*		Applied Research**		Development***	
	total	social sciences	total	social sciences	total	social sciences
CSRS	23,663	5,261	38,607	8,584	{none designated}	
HSMHA	43,615	7,103	128,361	13,008	9,534	{not broken out}

This pattern of basic research, applied research and development relative funding proportions follows the federal obligated budgetary allocation omitting NASA, the Atomic Energy Commission {AEC} and the Department of Defense {DOD} for fiscal 1970 regardless of subject area. These totals are shown below in millions of dollars:

	Basic Research total	Applied Research total	Development total
Federal Government **** {omitting NASA, AEC & DOD}	947	1,365	493

The CSRS applied-research-to-basic-research funding proportion in 1970 of 1.6 {8,584/5,261} is <u>not</u> reflected in the assessment findings, assuming a direct correspondence between budgetary allocation levels and number of projects.

Clearly this fact can be explained through the assessment's design trade-off of inventorying only District of Columbia area information systems and not inventorying research not in these systems. However it is EMO's opinion that rural health services research and development not controlled by a "tertiary research" activity, i.e. not systematically reclaimed from the hinterland of field research and properly aggregated, is in reality research undirected toward solving any practical rural health problems. Research and development programs should be directed toward purposes beyond the training of graduate students and remuneration

*Table C-31, and C-47, <u>Federal Funds for Research, Development and Other Scientific Activities</u>, Volume XVIII, Washington, D.C., National Science Foundation, 1969

**<u>Ibid</u>, Table C-50 and C-66

***<u>Ibid</u>, Table C-69

****<u>Ibid</u>, pages 10 through 14

of researchers and their institutions. Thus the failure to "find" such research and development in no way undermines this position — it reinforces the "tertiary research" conceptual need.

The transformation from assessment research type/outcome type to conventional research and development definitions could also be used as an explanation for the lack of correlation between the CSRS applied-research-to-basic-research funding proportion and the assessment findings. However from a pragmatic point of view, the definition transformations are practical and reflect actual evaluation of the research as well as its intended basic, applied or development purpose.

The applied-research-to-development-activity budgetary proportion in fiscal 1970 is interesting. The HSMHA pattern follows closely that of the federal government, omitting NASA, AEC and DOD. However CSRS has no designated development budgetary obligations. Nevertheless the assessment findings do reflect a substantial but lower applied-to-development proportion, possibly a result of "social action" consciousness on the researcher's part or bias from the assessment classification/evaluation (research type/outcome type) terminology.

Contrasting the above research and development funding proportions, the pattern which emerges when total federal obligated budgetary allocations including NASA, AEC and DOD are considered is critically different. The fiscal 1970 figures in millions of dollars are as follows:

	Basic Research total	Applied Research total	Development total
Federal Government* (including NASA, AEC and DOD)	2,399	3,713	10,376

Obviously the NASA, AEC and DOD group has heavy technology-intensive, hardware-dependent development programs. There may also be correlation between this pattern and the well defined policy objectives and Congressionally backed policy priorities of these three agencies. Furthermore all three agencies have highly developed "tertiary research" activities to best allocate their research funding resources among those knowledge need areas related to their distinct policy objectives.

Without considering the quality or depth of knowledge of the rural health care services research, in light of the profound health inadequacies of specific rural areas (see the Final Report, Section 9 and its Appendix I-2 for statistical examples of these inadequacies), the assessment effort results and the above interpretations tend to support the two hypotheses offered above. In essence the present basic, applied and developmental mix is

inadequate to come to grips with the deficiencies of rural health care services delivery systems. Based on extensive searching, it is doubtful that USDA and DHEW (the two major federal rural health research and development sources - OEO is now under DHEW) possess "tertiary research" activities systematically directed by structured rural development policy objectives. Based on the uncoordinated research exposed in Section 7 of the Final Report, it is even more doubtful that they coordinate these "tertiary research" activities. This direction and coordination would be listed under "intramural" development activities in the Federal Funds for Research, Development and Other Scientific Activities, Volume XVIII. We do find that two thirds of HSMHA development budgetary obligations are intramural but we could find no examples of such comprehensive rural health "tertiary research". As shown, CSRS has no development budgetary obligations listed. CSRS's CRIS is a management information system, not a technical information system as would be required by a "tertiary research" program. The National Agricultural Library's CAIN system is a technical information system but is not comprehensive enough for rural health. These two systems will be discussed further. The other information systems surveyed (NTIS, ERIC, SIE, NLM, etc. — see Final Report, page 2-10 to 2-11) do not meet the "tertiary research" requirements for a technical information system for rural health.

This "tertiary research" inadequacy or nonexistence is viewed from a different perspective in Table 1, Research Performers with Federal Funding - Assessment Statistics. Note the paucity of USDA and DHEW performed (intramural) development activity. A similar dearth exists with the "Health Planning Agencies" and would be explained by the funding weaknesses of CHP's and to a lesser degree RMP's. Also note the dominance of colleges and universities in all three classifications of research and development activities. This is borne out in Table 2 which shows fiscal 1970 budget obligation figures in thousands of dollars. (The Agricultural Research Service, ARS, is shown because it is USDA's largest research and development component.)

We would like to refer back to the "geographic scope" distribution presented earlier in this section. "Locally" focused research, that is subcounty, county or multi-county within a specific state, dominates basic, applied and development activities. The pervasiveness of rural health care delivery problems are of such a nature that this local focusing of research is appropriate. The basis of the Knowledge Assessment, Section 7 of the Final Report, is a high resolution spectrum of rurality linked to the county as a geographical unit. However such "local" oriented research will not deliver its maximum potential unless this research is aggregated through the "tertiary research" concept presented in this summary. Thus any plans for increased areawide research ("Regional" and "National") should be a systematically derived mixture of such areawide studies and formalized "tertiary research" activity concentrating in part on the aggregation of this local research.

Table 1 - Research Performers with Federal Funding - Assessment Statistics

	Basic		Applied		Development	
	No.	%	No.	%	No.	%
Private Ed. Institutions						
Health Related	1		2		—	
Miscellaneous	2		3		2	
total:	3	5.8	5	12.2	2	5.0
Public Ed. Institutions						
Agricultural Components	9		6		4	
Health Related	3		4		3	
Miscellaneous	7		6		10	
total:	19	36.6	16	39.0	17	42.6
Professional Associations	2	3.8	—	—	—	—
Non-Profit Institutions	8	15.4	1	2.4	1	2.5
Profit Institutions	—	—	2	4.9	2	5.0
Federal Government						
USDA	3		2		1	
DHEW	2		4		2	
Other Federal Agencies	2		1		1	
Quasi-Federal Agencies	1		2		—	
total:	8	15.4	9	22.0	4	10.0
Health Planning Agencies	8	15.4	3	7.3	3	7.5
State Government Agencies	2	3.8	4	9.8	8	20.0
Sub-State Government Agencies	2	3.8	1	2.4	3	7.5

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Table 2* — Research Performers with Federal Funding - NSF Statistics

	Total	Intramural	Extramural				
			Industrial Firms	Universities, Colleges	Other non-profit	Other	Foreign
Basic Research:							
CSRS	23,663	775	—	22,774	114	—	—
HSMHA	43,615	15,269	—	25,184	1,902	1,152	108
ARS	66,886	58,199	3	1,884	90	—	6,710
Applied Research:							
CSRS	38,607	1,263	—	37,157	187	—	—
HSMHA	128,361	16,886	93	62,376	24,647	16,569	7,790
ARS	78,037	74,730	440	1,419	—	41	1,407
Development:							
CSRS							
HSMHA	9,534	6,030	504	385	2,573	42	—
ARS	12,706	12,252	3	281	—	—	170

*Ibid, Table C-29, C-50 and C-69 in thousands of dollars.

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From this data the following hypothesis is formulated: "tertiary research" activity or an analogous activity is conducted by the Agricultural Research Service and the Cooperative State Research Service in their agricultural development efforts as well as by other USDA agencies involved in agricultural development. Consequently the CSRS has a management information system with high agricultural development resolution (CRIS). The National Agricultural Library's CAIN system is the counterpart technical information system with high agricultural development resolution. Rural development resolution including rural health services research is relatively lower and warrants serious discussion and action.

In summary these considerations and interpretations form the basis for recommendations No. 2,3,5,7 and 9 presented in the Final Report, section 12.

Recommendation 2, "The need for a single agency to be active at the Federal level with the responsibility for synthesizing systematic planning for a national rural health care system."

The implementation here of course is flexible. Yet the coordination responsibilities delegated to the Rural Development Service (RDS) [Rural Development Act of 1972 section 603] could be ideally realized here. If the RDS were given the tools to conduct rural health "tertiary research" regardless of the funding source, e.g. DHEW or HUD, then it would be in the prime position to coordinate all federally funded rural health care services and furnish authoritative rural health policy components as inputs into HEW's National Council on Health Planning and Development (NCHPD). The NCHPD has been mandated by National Health Planning and Resources Act of 1974 (PL 93-641) as the mechanism to conduct "development" activities in the nation's health care services "system". Recommendations 1, 3 and 4 are reinforced by this recommendation. Implementation of this recommendation by RDS (or another USDA component) would require close RDS/NCHPD cooperation.

Recommendation 3, "The continuation of the data base resulting from this assessment effort by not only continuing to inventory, classify, and evaluate, but to enlarge its capture techniques and subject areas. The purpose would not only involve the effective dissemination of rural health care services research to researchers and decision-makers, but the coordination of rural health care services research in-house and out-of-house. Thus, one major rural health care services research data base would stimulate a systematic approach to the problems of rural health."

This addresses the stated need for a technical information system as the heart of a "tertiary research" activity linked to a management information system.

Recommendation 5, "More constructive dialogue between researchers (academicians) and the policy-makers to lessen the 'conflict' between their respective theoretical and practical orientations,

hopefully leading to more problem-oriented research by more 'social action' oriented researchers and more management oriented policy-makers who systematically know what objectives they want."

This will be of prime importance to any successful implementation of a "tertiary research" activity, i.e. Recommendations 2,3,4, and 6. It will also be a necessity for the attainment of Recommendation 7 below.

Recommendation 7, "The need to increase the amount of "problem-oriented research" recognizing the need for other types of research. Rural health problems require such problem-oriented research if solutions are to be found."

This means an increase in applied research and development activities. However historically such emphasis on development activities only accompanies political mandates and should be accompanied by "tertiary research" activities controlled by a concrete systems approach effected policy direction {involving normative, strategic and operational policy levels}.

Recommendation 9, "The investigation by USDA into the national health services data system being constructed by DHEW's Center for Health Statistics." We would anticipate that any national health care services delivery system, whose planning and implementation has been mandated by PL 93-641, would utilize very heavily this "national health services data system" to zero in on geographical problem areas and health needs of those problem areas. Likewise the implementation of Recommendation 2 with RDS or any other USDA component would require closer RDS/NCHPD cooperation. The Center for Health Statistics would be a logical point to increase this cooperation and ensure that rural areas are included "properly" {proper rural resolution} in this "national health services data system". [The Office of Rural Health's {DHEW} impact on increasing this "rural resolution" has not been observed as of this time].

Demonstration of a Use of The Assessment's Data Base Elements

As stated above, the systems approach to rural health care services research {and development activities} used in the assessment effort is based on the following:

- To systematically control the direction and thus attain the practical social objectives of any large research and development program, "tertiary research" activity must be implemented.

- "Tertiary research" activity necessarily involves knowledge assessments on an almost continual basis. "Ideal" knowledge assessments involve "aggregating the data elements in the research documents identified and comparing

these aggregated data elements with models of the 'ideal' rural health care services delivery system components."

This "aggregating" task ensures the input of normative policy elements, personified through the choice of "ought to" models, into the "tertiary research" activity. Thus the "tertiary research" activity is brought out of an environment isolated from decision-makers and is connected through feedback mechanisms to policy formulation and to the decision-makers. This will be seen more easily by a closer look at this "ideal" knowledge assessment methodology. A visual step-by-step conception of it is presented in Figure 1.

The assessment effort embodied in the Final Report approximates, within the limitations discussed earlier, steps 1,2,3 and part of step 4. The "geographic aggregation" of step 3 shows potentially large knowledge vacuums in a "rurality definition spectrum" taking into account experimentally isolated variables (see "Bibliography") of "economy of scale" and "access distance" (see Section 7, Final Report). This is the basis for the Final Report's Recommendation 8.

Recommendation 8, "The adoption of more dynamic concepts of 'rural', e.g. the concepts behind the indepth assessment to include the dimensions of economies of scale and access distances of ERS's non-commuter/commuter counties concept". Since step 4 is only partially complete the demonstration will proceed from there.

First "policy determined models of the Department's rural health care services involvement and goals" would have to be identified. For the purpose of the demonstration, relevant policy elements will be assumed as follows:

- o What part will USDA play in DHEW's NCHPD activities and other health activities?

  USDA will work cooperatively with DHEW and will supply the authoritative rural health care services policy inputs.

- o How will these "policy inputs" be obtained?

  RDS's Economic Development Division (which is studying CHP areas and developing a data base about these areas), will be given the tools and responsibility to carry out rural health care services tertiary research activity, regardless of funding source. RDS would be responsible for coordinating all federal rural health care services research and for inputting the authoritative rural health care services policy into DHEW's NCHPD and other health activities.

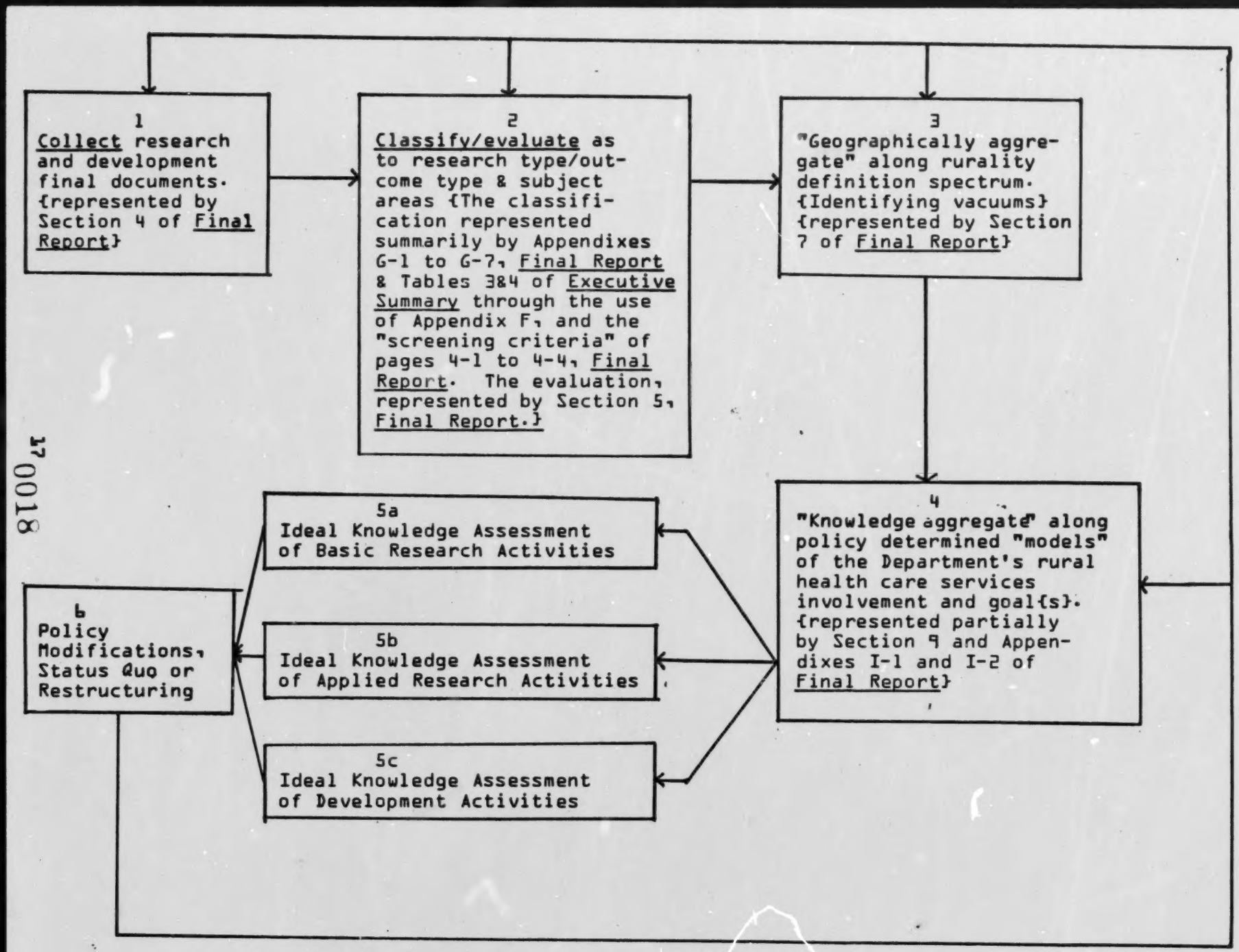
1
Collect research and development final documents. {represented by Section 4 of Final Report}
2
Classify/evaluate as to research type/outcome type & subject areas {The classification represented summarily by Appendixes G-1 to G-7, Final Report & Tables 3&4 of Executive Summary through the use of Appendix F, and the "screening criteria" of pages 4-1 to 4-4, Final Report. The evaluation, represented by Section 5, Final Report.}
3
"Geographically aggregate" along rurality definition spectrum. {Identifying vacuums} {represented by Section 7 of Final Report}
4
"Knowledge aggregate" along policy determined "models" of the Department's rural health care services involvement and goal{s}. {represented partially by Section 9 and Appendixes I-1 and I-2 of Final Report}
5a
Ideal Knowledge Assessment of Basic Research Activities
5b
Ideal Knowledge Assessment of Applied Research Activities
5c
Ideal Knowledge Assessment of Development Activities
6
Policy Modifications, Status Quo or Restructuring

Figure 1

17 00018

- What is the normative policy of the USDA as it addresses rural health care services goals?

  Those goals are full equality of access, high quality of care and the attainment of rural health standards on a par with urban health standards in specific rural areas, i.e., the most rural areas (the highest numbered rurality codes in Section 7, Final Report).

- What rural health care services delivery system model or models, as well as criteria, does the USDA consider or want to be considered as part of its normative policy to attain the above stated goals?

  This model is shown in Figure 2-1 of the Final Report. Furthermore this model is the framework for the subject categorization format (Appendix F) used in the assessment effort and part of step 2 of the "ideal" knowledge assessment methodology.

At this point it would be possible to complete step 4, the "knowledge aggregation" by reorganizing the subject categorization format alpha-numerically along the delivery system model represented by Figure 2 of the Final Report. An example of this process is shown in Figure 2 for "general health", representing part of the aggregating template.

Please note that IV-Evaluation, X-Technology and XI-Methodology are subject areas of the subject categorization format which support the knowledge assessment component of the "tertiary research" activity in the larger sense. That is they are used in steps 1,2, 3, and 4 of Figure 1.

Using the appropriate "aggregating template" and the potential knowledge vacuum areas as a guide, the specific research and development documents are acquisitioned from the technical information system. For example, the user interested in the consumer aspect of rural health care would acquisition the documents which dealt with the subject categories IA1, IA2, IA3, VIIB, VIID1, VIID4, IXA and IXE. These documents and those for any other subject area can be easily identified by using Table 3. Appendix F, Subject Categorization Format of the Final Report is the narrative key to the alphanumeric code of the subject areas. The document number in Table 3, e.g. 005, is the entry into Appendix G-1, Research Publications Accepted - By Title, Final Report yielding specific bibliographic data for the documents desired. These documents are then acquisitioned and analyzed for data elements using as the standard the knowledge required to implement the policy derived model rural health care delivery system. Section 9 of the Final Report is a suggested starting point for such a "knowledge aggregation." Steps 5 and 6 of Figure 1 are thus the results of this iterative process. Obviously this approach requires appropriate resources of funding, time and talent (both academician and decision making).

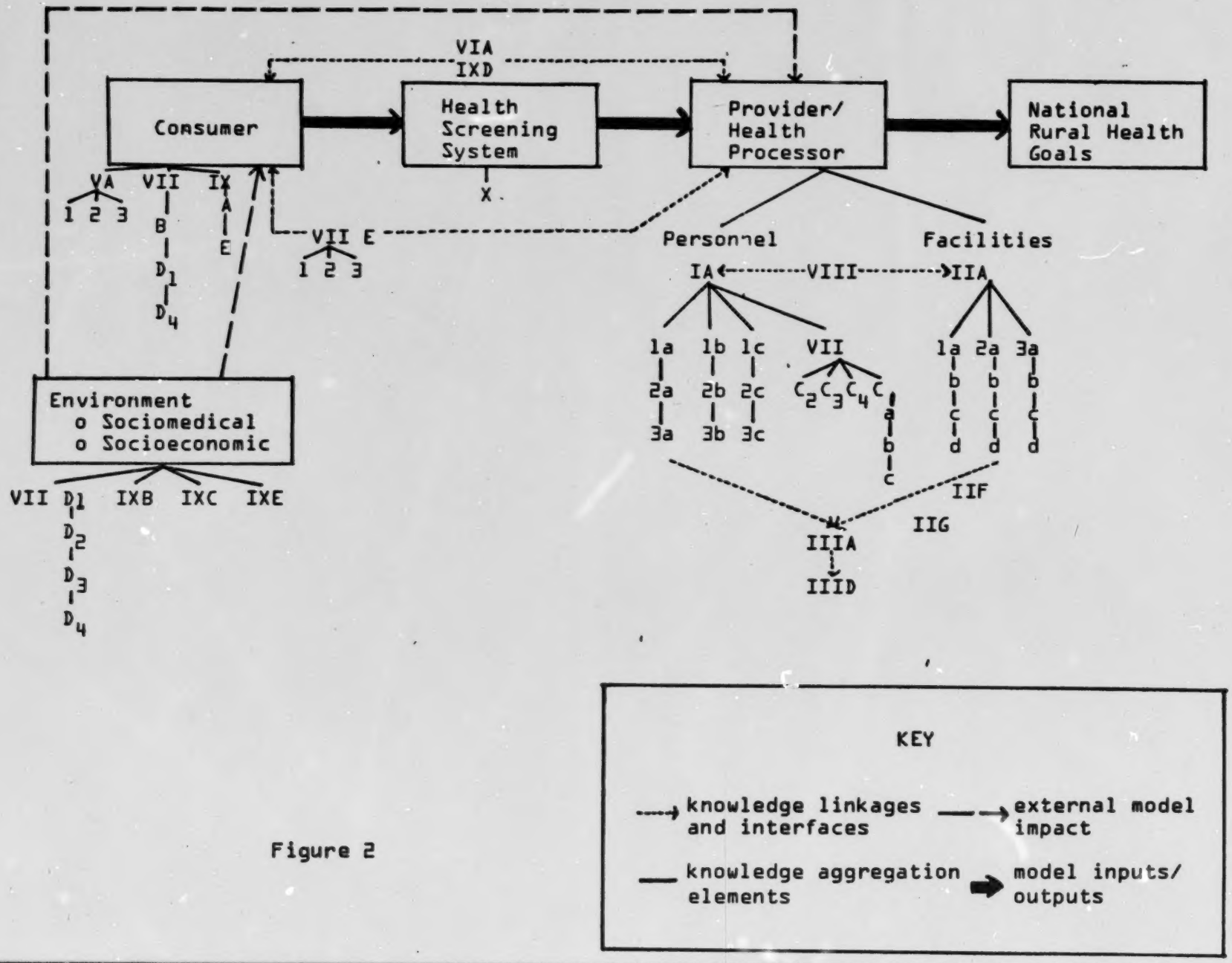

Figure 2

0020

Table 4 is a reordering of Table 3 so that a one-to-one correspondence can be made with Appendix G-1 of the Final Report yielding indepth subject categorization for specific documents. Tables 3 and 4 represent indepth subject categorizations from Appendix F, Final Report and constitute data not in that Final Report but gathered during the assessment effort. It is hoped these tables will extend the usefulness of the Final Report.

The above discussion should clarify: the recommendations of Section 12 of the Assessment of Rural Health Research Final Report, in the broader concept of "tertiary research" activity; the relationship of a comprehensive knowledge assessment with such a "tertiary research" activity and the requirements for such an activity; and the position of the assessment effort to date in relation to this "tertiary research" concept, i.e., the Final Report represents the beginning step toward a comprehensive knowledge assessment as well as an important component in the "tertiary research" concept. It is this concept which is necessary to overcome the pervasive problems of rural health care services delivery and to a larger degree rural development.

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0022

TABLE 3 - RESEARCH PUBLICATIONS ACCEPTED

— By Indepth Subject Category

By Document Access Number

Subject Category	Document Access Number	Description
IA1a	082	(Involves several indices of R. H. Care Conditions)
	094	
	101	
	110	
	112	
	122	
	125	
	132	
	136	
	142	
	155	
	187	
	189	Naturopaths
	198	Nurse practitioners
	199	Nurse, practical and registered
	212	
	214	Physicians
	219	
	221	
	222	
	223	
	230	
	235	
	241	
	242	
	243	
	246	
	260	
	266	
	285	
	288	
	290	
	297	
	303	

0024

TABLE 3 - RESEARCH PUBLICATIONS ACCEPTED
- By Indepth Subject Category
By Document Access Number

SUBJECT CATEGORY (See Appendix F, Final Report)	DOCUMENT ACCESS NUMBER	DESCRIPTION
I	004	
	035	
	139	
	182	Supply
IA	005	
	041	
	063	
	123	
	131	
	277	
IA1	105	
	133	
	171	Recruitment of physicians
	202	
	295	
IA1a	004	
	008	(13 categories allied health personnel)
	009	
	015	
	029	
	031	
	035	
	037	
	050	
	055	
	058	
	061	
	078	
	079	

Subject Category	Document Access Number	Description
IA2	105	
	202	
IA2a	031	
	039	
	112	
	200	
	230	
	285	
	289	
	303	
	321	
IA2b	099	Physicians and hospitals
	154	
	271	
	289	Speech and hearing specialist
IA3	202	
IA3a	031	
	218	Podiatrists
	285	
	303	
	321	Supply
IA3b	099	Physicians and hospitals
IA3c	218	Podiatrists
IB	005	
	041	
	094	
	133	
	258	
IB1	013	
	175	
	268	
	301	
IB1a	004	
	006	13 categories of allied health personnel

0025

Subject Category	Document Access Number	Description
IA1a	311	
	318	
	321	
IA1b	015	
	054	
	079	
	087	
	089	
	099	
	101	
	102	
	115	
	197	
	198	
	221	
	222	
	235	
	242	
	246	
	260	
	266	
	270	
	271	
	278	
	297	
	306	
	310	
	311	
	318	
IA1c	051	
	132	
	189	
	198	
	221	

Subject Category	Document Access Number	Description
IC1a	303	
	321	
IC1b	047	Utilization of dental aux.'s and dentists (type of practice)
	087	
IC1c	068	
	132	
IC2	293	
IC2a	031	
	047	
	112	
	201	
	285	
	321	
IC2b	047	
ID	005	
	031	
	131	
	317	Post-graduate education
ID2a	266	
IE	005	
	031	
	285	
	303	
	321	
IE2	202	
IE2a	155	Nurses
IE3a	155	Nurses
IE4	302	Indian Health aids
IE4a	155	Nurses
IE5	202	Emergency medical services
	298	
II	005	Supply of facilities

Subject Category	Document Access Number	Description
IB1a	031	
	035	
	112	
	125	
	132	
	285	
	303	
	321	
IB1b	257	
IB1c	051	
	132	
IB2a	031	
	112	
	285	
	303	
	321	Supply
IB3a	031	
	285	
	303	
	321	
IC	005	
	040	
	094	
	133	
IC1	293	
IC1a	012	
	031	
	047	
	068	
	112	
	122	
	132	
	201	
	285	
	290	

9200

Subject Category	Document Access Number	Description
IIA1c	216	Retirement communities
	240	
	241	
	245	
	266	
	275	Satellite health facilities
	286	
IIA1d	031	
	034	Delivery
	126	Supply
	148	
	157	
	196	
	199	Supply of health facilities
	275	Supply
	282	Satellite health facilities
	283	Supply
	285	Supply
	303	Supply
	321	Supply
IIA2	078	
	136	
	154	
	166	
	277	
IIA2b	010	
	200	Short term hospital
IIA2c	055	
	120	
	121	
	286	
IIA2d	031	
	088	
	148	

1200

Subject Category	Document Access Number	Description
II	139	
	182	Health facility supplies (ambulatory, lab, hospitals, mental health clinics, nursing homes, dental facilities (offices and clinics))
IIA	041	
	138	
	193	
	194	
	209	
	261	
	264	
	266	
IIA1	039	
	061	
	089	
	116	
	124	
	125	
	131	
IIA1a	297	
IIA1b	037	
	115	
	266	
	297	
IIA1c	009	
	070	
	072	
	073	
	115	
	120	
	161	
	171	
	203	

Subject Category	Document Access Number	Description
IIB2d	031	
	064	Supply of mental retard. services and facilities
	285	
	303	Supply
	321	
IIB3	028	
IIB3c	147	Supply of mental retard. services and facilities
IIB3d	031	
	147	Supply of mental retard. services and facilities
	285	
	303	Supply
	321	
IIC	061	
	116	
	223	
IIC1	024	
	191	
IIC1d	126	Supply
IID	146	
	177	
IID2d	196	
IIE	285	
	303	Supply
	321	
IIE1	071	
	153	Migrant educational project
	158	Migrant school health service
	254	
	255	
	301	Mental
IIE1c	128	
IIE2	148	Supply
	196	
IIE2b	300	
IIE3	147	Supply
IIE4	150	

Subject Category	Document Access Number	Description
IIA2d	165	
	285	Supply
	303	Supply
	321	
IIA2e	294	
IIA3d	031	
	148	
	285	
	303	
	321	Supply
IIB	005	
	041	
	044	
	098	
IIB1	013	
	065	
	114	
	125	
	175	
	185	
	231	
	268	
	314	
IIB1c	072	Comprehensive planning
IIB1d	031	
	064	Supply of mental retard. services and facilities
	282	Supply
	283	Supply
	285	Supply
	303	Supply
	321	Supply
IIB2	028	
	176	
	185	
	314	

0028

Subject Category	Document Access Number	Description
IIG4	053	Emergency medical services
	085	
	154	
	192	
	220	
	257	
IIG5	052	Emergency medical services
	053	Emergency medical services
	209	
	261	
IIG8	160	
IIH	269	Mobile coronary care unit
III	038	General organization, funded various ways
	075	University sponsored
	275	
IIIA	048	
	164	
	204	
IIIA1	105	
	139	
	240	
IIIA1a	095	Migrant health
	101	
	135	
	151	
	274	
	292	
	318	
IIIA1b	001	
	006	
	023	
	095	
	242	
	243	
	253	

0029

Subject Category	Document Access Number	Description
IIE5	052	Emergency medical services
	053	Emergency medical services
	143	
	148	Labs - supply and cost
	190	Services for the blind
	220	
IIF	261	
	301	
	309	
IIF2	103	
	195	
	214	
	217	
IIF3	121	
	190	Services for the blind
IIF4	291	
IIF5	300	
IIG	016	
	193	
	194	
IIG1	209	
	225	
	261	
IIG2	209	
	225	
	261	
IIG3	011	
	062	
	085	
	145	
	252	
	308	
IIG4	007	
	052	Emergency medical services

Subject Category	Document Access Number	Description
IIIB	048	
	098	
IIIB1	139	
IIIB1a	042	
	175	
	296	
IIIB1b	253	
IIIB1c	041	
	044	
	045	
	064	
	072	
	109	
	185	
	258	
	268	
IIIB1d	086	
	114	
	174	
	176	
	304	
IIIC	048	
	319	
IIIC1	139	
IIIC1c	024	
	072	
IIIC1d	173	
IIIC1e	280	
IIID	006	
	016	
	027	
	048	
	066	
	083	
	084	

Subject Category	Document Access Number	Description
IIIA1b	318	
IIIA1c	011	
	041	
	072	
	095	Migrant health
	197	
	251	
	279	
IIIA1d	066	
	069	
	248	
IIIA1e	073	
	143	
	184	
	195	Comprehensive social service planning
IIIA1f	034	
	170	
	315	
IIIA1g	076	
	103	OEO/U. of North Carolina
	142	
	270	
	305	U.S. Public Health Service and Gillette Co.
IIIA2	124	
IIIA2a	030	
	149	HMO's
	212	
IIIA2c	212	
IIIA2e	183	
	195	Comprehensive social service planning
	306	University sponsored
	309	Hospital

Subject Category	Document Access Number	Description
IVA1	216	Retirement community
	250	
IVA1a	049	
	096	
	163	Summary of all migrant programs
	208	
	259	
	307	
IVA1b	152	
	259	
IVA1c	162	
IVA2	033	
	045	
	177	
	276	
IVA2a	071	
	299	
IVA2b	299	
IVA3	175	
IVA3a	049	
IVA4	134	
	173	
	276	
	299	
IVA5a	254	
	255	
	256	
	316	Migrant school health program
IVA5b	124	
	300	
IVA5d	134	
	149	
IVA5e	052	Emergency medical services

Subject Category	Document Access Number	Description
IIID	106	
	139	
	164	
	165	Hospital merger
	169	Family planning
	188	
	229	
	237	
	240	
	248	
	252	
	254	
	255	
	256	
	263	
	264	
	268	
	272	
	294	
	304	
	308	
	309	
	317	
	319	
IIID1	018	
IIIE	319	Family planning
IVA	041	
	082	
	111	
	209	
	251	
IVA1	063	
	081	
	123	
	124	
	177	

0031

Subject Category	Document Access Number	Description
IVC2	009	
	020	
	050	
	094	Indian health manpower shortage
	104	
	108	
	159	
	162	
	186	
	221	
	230	
	245	
IVC3	027	Special target of disadvantaged families
	054	Family planning
	077	Dissemination information on Medicare
	088	
	095	Migrant health
	104	Evaluation of feasibility study
	117	Day care center and nutrition
	158	
	234	Transfer payments to rural poor
V	036	
	113	
	139	
VA	048	
	056	
	063	
	126	
	130	
	140	
	142	
	146	
	156	Rural Indian health

Subject Category	Document Access Number	Description
IVA5e	053	Emergency medical services
	093	Evaluation of a program designed to produce rural physicians
	220	
	249	In the field health services
	302	Nutrition education
IVB1	058	
	063	
	123	
	203	
	236	
	267	
	284	
IVB1a	077	
	161	
	208	
IVB3	238	
IVB5e	093	Evaluation of a program designed to produce rural physicians
IVC	001	
	023	
	097	
	215	Helicopter ambulance service
IVC1	050	
	059	
	070	
	085	
	086	
	104	
	145	
	150	
	230	
	245	
	261	

0032

Subject Category	Document Access Number	Description
VE	048	
	220	
VE1	087	
VE5	179	Migrant health service
	180	Migrant health service
VF	048	
VI	048	
VIA	038	
	056	
	124	
	184	
	204	
	234	Transfer payments to rural poor
	240	
	273	
	319	
VIA1	030	
	049	
	212	
	215	
	232	
VIA2	217	
	219	
	232	
VIA3	232	
VIB	042	
VIB1	043	
VIC	040	
	178	
	206	
	232	
VIC3	163	
VIE	269	Mobile coronary care unit
VIIA	014	
	032	

Subject Category	Document Access Number	Description
VA	262	
	275	
	307	
	312	
VA1	089	
	099	Physicians and hospitals
	137	
	181	
	205	
	244	
	259	
	261	
	267	
	281	
	288	
VA2	259	
VB	046	
	048	
	065	
	140	
	142	
	146	
	156	
	175	
	276	
VB3	147	
VC	048	
	067	
	142	
	146	
	312	
VC1	259	
	281	
VD	140	
	201	

0033

Subject Category	Document Access Number	Description
VIIC	097	
	110	
	111	
	125	
	213	
	222	
	278	
	320	
VIIC1	212	
	295	
VIIC1d	307	
VIIC4	172	
VIIC4a	239	
VIID	013	
	106	
	130	
	175	
VIID1	021	
	022	
	025	
	026	
	067	
	090	
	100	
	113	
	117	
	140	
	233	
	247	
VIID2	019	
	021	
	067	
	076	
	080	

Subject Category	Document Access Number	Description
VIIA	127	
	210	
	233	
	247	
	287	
VIIB	002	
	020	
	021	
	022	
	029	
	032	
	057	
	067	
	076	
	094	
	098	
	126	
	169	
	172	
	175	
	207	Drug abuse
	210	
	211	
	224	
	235	
	239	
	262	
	265	
	275	
	292	
	299	
	301	
VIIC	019	
	021	
	029	

0034

Subject Category	Document Access Number	Description
VIID4	226	
	228	
	233	
	235	
	253	
	274	
	281	
VIID5	055	
	069	
	140	Distribution of medical care according to age, income and residence
	216	Retirement community
VIIE	014	
	315	
VIIE1	075	
	076	
	166	
	261	
	272	
VIIE2	155	
	166	
	170	
	186	
	236	
	261	
VIII	004	
	005	Personnel and facilities
	031	" "
	048	Comprehensive
	134	Cost of drugs
	182	
	310	
VIIIC	060	
VIIID5	060	
IXA	021	

Subject Category	Document Access Number	Description
VIID2	100	
	113	
	116	
	118	
	119	
	122	
	127	
	129	
	226	
	227	
	228	
	237	
	253	
	274	
	277	
	279	
	298	
VIID3	003	
	033	
	065	
	067	
	207	
	227	
	273	
	313	
VIID4	002	
	018	
	046	
	067	
	075	
	076	
	109	
	119	
	137	
	224	

0035

Subject Category	Document Access Number	Description
IXE	026	Urban-rural differentials of health facilities and related differences in disabilities
	033	Nature and extent of mental illness in sparsely populated areas
	059	Applying technology to pilot project relative to Puerto Rico unique problems
	067	Problems of Native Americans (Indians)
	107	Asthmatic and hay fever in rural children
	118	Health and employment interrelatedness
	128	Problems of Native Americans (Indians)
	151	Black doctor shortage
	156	Indian health problems
	157	Indian health problems
	174	
	187	Maldistribution
	212	Doctor shortages
	233	Community organization and health
	236	Rural school psychological services
XA	017	
	048	
	144	
	267	
	294	
XB	007	
	039	
	059	
	144	
	192	
	294	
XC	017	
XE	104	Railroads

0036

Subject Category	Document Access Number	Description
IXA	036	
	040	
	060	
	080	Migrant health
	116	
	135	
	146	
	153	Migrant educational program
	178	
	179	
	180	
	191	
	205	
	206	
	223	
	249	
	282	
	283	
	316	Migrant school health program
IXB	074	
	092	
	167	
	249	
	305	
IXC	009	
	183	Occupational employees only
IXD	081	
	124	
	168	
	192	Maldistribution of U.S. population
	229	Problem areas in local rural developmen
	250	
	287	
	313	
IXE	025	Urban-rural differentials of health facilities and related differences in disabilities.

Subject Category	Document Access Number	Description
XIB	090	
	091	
	092	
	108	
	129	
	152	
	159	
	167	
	188	
	238	
	280	
	284	
	287	
	296	
XIC	078	
	083	
	084	Computer simulation
	096	
	138	
	141	
	168	Essay on rural research process pragmatism
	231	Problems in researching in rural areas
	287	Systems approach application

Subject Category	Document Access Number	Description
XE	160	Influence of automobile
	215	Helicopter ambulance service
XIA	012	
	025	
	026	
	032	
	043	
	044	
	049	
	057	
	062	
	074	
	088	
	091	
	102	
	107	Asthmatic & hay fever in rural children
	129	
	137	
	141	
	181	
	210	
	211	
	213	
	225	
	230	
	231	
	244	
	263	
	265	
	287	
	311	
	320	
XIB	003	
	010	

0037

TABLE 4 - RESEARCH PUBLICATIONS ACCEPTED

— By Document Access Number

By Indepth Subject Category

Document Access Number	Subject Category	Additional Description
009	IA1a	
	IIA1c	
	IVC2	
	IXC	
010	IIA2b	
	XIB	
011	IIG3	
	IIIA1c	
012	IC1a	
	XIA	
013	IB1	
	IIB1	
	VIID	
014	VIIA	
	VIIE	
015	IA1a	
	IA1b	
016	IIG	
	IIID	
017	XA	
	XC	
018	IIID1	
	VIID4	
019	VIIC	
	VIID2	
020	IVC2	
	VIIB	
021	VIIB	
	VIIC	
	VIID1	
	VIID2	
	IXA	
022	VIIB	
	VIID1	
023	IIIA1b	
	IVC	

0039

TABLE 4 - RESEARCH PUBLICATIONS ACCEPTED
— By Document Access Number
By Indepth Subject Category

DOCUMENT ACCESS NUMBER	SUBJECT CATEGORY	ADDITIONAL DESCRIPTION
	See Appendix F Final Report	
001	IIIA1b	
	IVC	
002	VIIIB	
	VIID4	
003	VIID3	
	XIB	
004	IA1a	
	I	
	IB1a	
	VIII	
005	IA	
	IB	
	IC	
	ID	
	IE	
	II	Supply of facilities
	VIII	Personnel and facilities
006	IIIA1b	
	IIID	
007	IIG4	
	XB	
008	IA1a	13 categories of allied h. pers.
	IB1a	13 categories of allied h. pers.

Document Access Number	Subject Category	Additional Description
031	IIA1d	Supply
	IIA2d	Supply
	IIA3d	Supply
	IIB1d	Supply
	IIB2d	Supply
	IIB3d	Supply
	IIE	Supply
	VIII	Manpower & facilities
032	VIIA	
	VIIB	
	XIA	
033	IVA2	
	VIID3	
	IXE	Nature & extent of mental illness in sparsely populated areas
034	IIA1d	Delivery
	IIIA1f	
035	I (Comprehensive)	All levels of mpr. supply and distribution
	IA1a	
	IB1a	
036	V	
	IXA	
037	IA1a	
	IIA1b	
038	III	General organization, funded various ways
	VIA	
039	IA2a	

Document Access Number	Subject Category	Additional Description
024	IIC1	
	IIIC1c	
025	VIID1	
	IXE	Urban-rural differentials of health facilities and related difference in disabilities
	XIA	
026	VIID1	
	IXE	
	XIA	
027	IIID	
	IVC3	Special target of disadvantaged families
028	IIB2	
	IIB3	
029	IA1a	
	VIIB	
	VIIC	
030	IIIA2a	
	VIA1	
031	IA1a	
	IA2a	
	IA3a	
	IB1a	
	IB2a	
	IB3a	
	IC1a	
	IC2a	
	ID	
	IE	

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Document Access Number	Subject Category	Additional Description
048	VE	
	VF	
	VI	
	VIII	
	XA	
049	IVA1a	
	IVA3a	
	VIA1	
	XIA	
050	IA1a	
	IVC1	
	IVC2	
051	IA1c	
	IB1c	
052	IIE5	Emergency medical service
	IIG4	Emergency medical service
	IIG5	Emergency medical service
	IVA5a	Emergency medical service
053	IIE5	Emergency medical service
	IIG4	Emergency medical service
	IIG5	Emergency medical service
	IVA5a	Emergency medical service
054	IA1b	Family planning
	IVC3	Family planning
055	IA1a	
	IIA2c	
	VIID5	

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Document Access Number	Subject Category	Additional Description
039	IIA1	
	XB	
040	IC	
	VIC	
	IXA	
041	IA	
	IB	
	IIA	
	IIB	
	IIIA1c	
	IIIB1c	
	IVA	
042	IIIB1a	
	VIB	
043	VIB1	
	XIA	
044	IIB	
	IIIB1c	
	XIA	
045	IIIB1c	
	IVA2	
046	VB	
	VIIB4	
047	IC1a	
	IC1b	Util. of dental aux. & dentists, (type of practice)
	IC2a	
	IC2b	
048	IIIA	
	IIIC	
	IIIB	
	VA	
	VB	
	VC	

Document Access Number	Subject Category	Additional Description
067	VC	
	VIIB	
	VIID1	
	VIID2	
	VIID3	
	VIID4	
	IXE	Problems of Native Americans (Indians)
068	IC1a	
	IC1c	
069	IIIA1d	
	VIID5	
070	IIA1c	
	IVC1	
071	IIE1	
	IVA2a	
072	IIA1c	
	IIB1c	Comprehensive planning
	IIIA1c	
	IIIB1c	
	IIIC1c	
073	IIA1c	
	IIIA1e	
074	XIA	
	IXB	
075	III	University sponsored
	VIID4	
	VIIE1	
076	IIIA1g	
	VIIB	
	VIID2	
	VIID4	
	VIIE1	
077	IVB1a	
	IVC3	Dissemination of information on medicare

Document Access Number	Subject Category	Additional Description
056	VA	
	VIA	
057	VIIB	
	XIA	
058	IA1a	
	IVB1	
059	IVC1	
	IXE	Applying tech. to pilot project relative to Puerto Rico's unique problems.
	XB	
060	VIIIC	
	VIIID5	
	IXA	
061	IA1a	
	IIA1	
	IIC	
062	IIG3	
	XIA	
063	IA	
	IVA1	
	IVB1	
	VA	
064	IIB1d	Supply of mental retard. service and facilities integrated services
	IIB2d	Supply of mental retard. service and facilities integrated services
	IIB1c	Mental retard. service and facilities, integrated services
065	IIB1	
	VB	
	VIID3	
066	IIIA1d	
	IIID	

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Document Access Number	Subject Category	Additional Description
093	IVA5e	Evaluation of program designed to produce rural physicians
	IVB5e	Evaluation of program designed to produce rural physicians
094	IA1a	
	IB	
	IC	
	IVC2	Indian H. Mpr. shortage
	VIIB	
095	IIIA1a	Migrant health
	IIIA1b	Migrant health
	IIIA1c	Migrant health
	IVC3	
096	IVA1a	
	XIC	
097	IVC	
	VIIC	
098	IIB	
	IIIB	
	VIIB	
099	IA1b	Physicians and hospitals
	IA2b	Physicians and hospitals
	IA3b	Physicians and hospitals
	VA1	Physicians and hospitals
100	VIID1	
	VIID2	
101	IA1a	
	IA1b	
	IIIA1a	
102	IA1b	
	XIA	
103	IIF2	
	IIIA1g	OEO and U. of North Carolina
104	IVC1	
	IVC2	
	IVC3	Evaluation of feasibility study

Document Access Number	Subject Category	Additional Description
078	IA1a	
	IIA2	
	XIC	
079	IA1a	
	IA1b	
080	VIID2	
	IXA	Migrant health
081	IVA1	
	IXD	
082	IA1a	Involves several indices of M.H. Care Conditions
	IVA	
083	IIID	
	XIC	
084	IIID	
	XIC	Computer simulation
085	IIG3	
	IIG4	
	IVC1	
086	IIIB1d	
	IVC1	
087	IA1b	
	IC1b	
	VE1	
088	IIA2d	
	IVC3	
	XIA	
089	IA1b	
	IIA1	
	VA1	
090	VIID1	
	XIB	
091	XIA	
	XIB	
092	IXB	
	XIB	

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Document Access Number	Subject Category	Additional Description
117	VIID1	
118	VIID2	
	IXE	Health and employment interrelatedness
119	VIID2	
	VIID4	
120	IIA1c	
	IIA2c	
121	IIA2c	
	IIF3	
122	IA1a	
	IC1a	
	VIID2	
123	IA	
	IVA1	
	IVB1	
124	IIA1	
	IIIA2	
	IVA1	
	IVA5b	
	VIA	
	IXD	
125	IA1a	
	IB1a	
	IIA1	
	IIB1	
	VIIC	
126	IIA1d	Supply
	IIC1d	Supply
	VA	
	VIIB	
127	VIIA	
	VIID2	
128	IIE1c	
	IXE	Problems of Native Americans (Indians)

Document Access Number	Subject Category	Additional Description
104	XE	Railroads
105	IA1	
	IA2	
	IIIA1	
106	IIIB	
	VIIB	
107	IXE	Asthmatic and hay fever in rural children
	XIA	Asthmatic and hay fever in rural children
108	IVC2	
	XIB	
109	IIIB1c	
	VIID4	
110	IA1a	
	VIIC	
111	IVA	
	VIIC	
112	IA1a	
	IA2a	
	IB1a	
	IB2a	
	IC1a	
	IC2a	
113	V	
	VIID1	
	VIID2	
114	IIB1	
	IIIB1d	
115	IA1b	
	IIA1b	
	IIA1c	
116	IIA1	
	IIC	
	VIID2	
	IXA	
117	IVC3	Day care center and nutrition

0044

Document Access Number	Subject Category	Additional Description
139	IIIB1	
	IIIC1	
	IIID	
	V	
140	VA	
	VB	
	VD	
	VIID1	
	VIID5	Distribution of medical care according to age, income and residence
141	XIA	
	XIC	
142	IA1a	
	IIIA1g	
	VA	
	VB	
	VC	
143	IIE5	
	IIIA1e	
144	XA	
	XB	
145	IIG3	
	IVC1	
146	IID	
	VA	
	VB	
	VC	
	IXA	
147	IIB3c	Supply - mental retard. fac.
	IIB3d	Supply - mental retard. fac.
	VB3	Supply - mental retard. fac.
148	IIA1d	
	IIA2d	
	IIA3d	
	IIE2	Supply
	IIE3	Supply

Document Access Number	Subject Category	Additional Description
129	VIID2	
	XIA	
	XIB	
130	VA	
	VIID	
131	IA	
	ID	
	IIA1	
132	IA1a	
	IA1c	
	IB1a	
	IB1c	
	IC1a	Comprehensive - all h. spr.
	IC1c	
133	IA1	
	IB	
	IC	
134	IVA4	
	IVA5d	
	VIII	Cost of drugs
135	IIIA1a	
	IXA	
136	IA1a	
	IIA2	
137	VA1	
	VIID4	
	XIA	
138	IIA	
	XIC	
139	I (Comprehensive)	
	II (Comprehensive)	
	IIIA1	

0045

Document Access Number	Subject Category	Additional Description
163	IVA1a	Summary of all migrant prog.
	VIC3	
164	IIIA	
	IIID	
165	IIA2d	
	IIID	Hospital merger
166	IIA2	
	VIIE1	
	VIIE2	
167	IXB	
	XIB	
168	IXD	
	XIC	Essay on rural research process pragmatism
169	IIID	Family planning
	VIIB	Family planning
170	IIIA1f	
	VIIE2	
171	IA1	Recruitment of physicians
	IIA1c	
172	VIIB	
	VIIC4	
173	IIIC1d	
	IVA4	
174	IIIB1d	
	IXE	
175	IB1	
	IIB2	
	IIIB1a	
	IVA3	
	VB	
	VIIB	
	VIID	
176	IIB2	
	IIIB1d	

Document Access Number	Subject Category	Additional Description
148	IIE5	Labs - supply and cost
149	IIIA2a	HMO's
	IVA5d	
150	IIE4	
	IVC1	
151	IIIA1a	
	IXE	Black doctor shortage
152	IVA1b	
	XIB	
153	IIE1	Migrant ed. proj.
	IXA	Migrant ed. proj.
154	IA2b	
	IIA2	
	IIG4	
155	IA1a	
	IE2a	Nurses
	IE3a	Nurses
	IE4a	Nurses
	VIIE2	
156	VA	Problems of Native Americans (Indians)
	VB	Problems of Native Americans (Indians)
	IXE	Problems of Native Americans (Indians)
157	IIA1d	
	IXE	Indian health problems
158	IIE1	Migrant school h. serv.
	IVC3	Migrant school h. serv.
159	IVC2	
	XIB	
160	IIG8	
	XE	Influence of automobile
161	IIA1c	
	IVB1a	
162	IVA1c	
	IVC2	

0046

Document Access Number	Subject Category	Additional Description
192	IB	
193	IIA	
	IIG	
194	IIA	
	IIG	
195	IIF2	
	IIIA1e	Comprehensive social service planning
	IIIA2e	
196	IIA1d	
	IID2d	
	IIE2	
197	IA1b	
	IIIA1c	
198	IA1a	Nurse practitioner
	IA1b	Nurse practitioner
	IA1c	Nurse practitioner
199	IA1a	Nurses, practical and registered
	IIA1d	Supply of H. facilities
200	IA2a	Nursing shortages
	IIA2b	Short term hospital - 2^{0}
201	IC1a	
	IC2a	
	VD	
202	IA1	
	IA2	
	IA3	
	IE2	
	IE5	Emergency medical services
203	IIA1c	
	IVB1	
204	IIIA	
	VIA	
205	VA1	
	IXA	
206	VIC	
	IXA	
207	VIIB	Drug abuse
	VIID3	

Document Access Number	Subject Category	Additional Description
177	IID	
	IVA1	
	IVA2	
178	VIC	
	IXA	
179	VE5	Mig. h. serv.
	IXA	
180	VE5	Mig. h. serv.
	IXA	
181	VA1	
	XIA	
182	I	Supply
	II	H. fac. supplies (mental and dental H. facilities, ambulance, labs, nursing homes)
	VIII	Pharmacy facilities - supply
183	IIIA2e	
	IXC	Occupational employees only
184	IIIA1e	
	VIA	
185	IIB1	
	IIB2	
	IIIB1c	
186	IVC2	
	VIIE2	
187	IA1a	
	IXE	Maldistribution
188	IIID	
	XIB	
189	IA1a	Naturopaths
	IA1c	Naturopaths
190	IIIE5	Services - blind
	IIF3	Services - blind
191	IIC1	
	IXA	
192	IIG4	
	IXD	Maldistribution of U.S. Pop.

0047

Document Access Number	Subject Category	Additional Description
220	VE	
221	IA1a	
	IA1b	
	IA1c	
	IVC2	
222	IA1a	
	IA1b	
	VIIC	
223	IA1a	
	IIC	
	IXA	
224	VII6	
	VIID4	
225	IIG1	
	IIG2	
	XIA	
226	VIID2	
	VIID4	
227	VIID2	
	VIID3	
228	VIID2	
	VIID4	
229	IIID	
	IXD	Local rural dev. prob. areas
230	IA1a	
	IA2a	
	IVC1	
	IVC2	
	XIA	
231	IIB1	
	XIA	
	XIC	Problems in researching in rural areas
232	VIA1	
	VIA2	
	VIA3	
	VIC	

Document Access Number	Subject Category	Additional Description
208	IVA1a	
	IVB1a	
209	IIA	
	IIG1	
	IIG2	
	IIG5	
	IVA	
210	VIIA	
	VIIB	
	XIA	
211	VIIB	
	XIA	
212	IA1a	
	IIIA2a	
	IIIA2c	
	VIA1	
	VIIC1	
	IXE	Doctor shortages
213	VIIC	
	XIA	
214	IA1a	Physicians
	IIF2	
215	IVC	Helicop. ambulance serv.
	VIA1	Helicop. ambulance serv.
	XE	Helicop. ambulance serv.
216	IIA1c	Retirement community
	IVA1	Retirement community
	VIID5	Retirement community
217	IIF2	
	VIA2	
218	IA3a	Podiatrists
	IA3c	Podiatrists
219	IA1a	
	VIA1	
220	IIE5	Prehospital coronary care
	IIG4	
	IVA5e	Prehospital coronary care

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Document Access Number	Subject Category	Additional Description
246	IA1a	
	IA1b	
247	VIIA	
	VIID1	
248	IIIA1d	
	IIID	
249	IVA5a	In the field h. services
	IXA	
	IXB	
250	IVA1	
	IXD	
251	IIIA1c	
	IVA	
252	IIG3	
	IIID	
253	IIIA1b	
	IIIB1b	
	VIID2	
	VIID4	
254	IIE1	
	IIID	
	IVA5a	
255	IIE1	
	IIID	
	IVA5a	
256	IIID	
	IVA5a	
257	IB1b	
	IIG4	
258	IB	
	IIIB1c	
259	IVA1a	
	IVA1b	
	VA1	
	VA2	

Document Access Number	Subject Category	Additional Description
233	VIIA	
	VIID1	
	VIID4	
	IXE	Community organization and health
234	IVC3	Transfer payment to rural poor
	VIA	
235	IA1a	
	IA1b	
	VIIB	
	VIID4	
236	VIIE2	
	IXE	Rural school psychological services
237	IIID	
	VIID2	
238	IVB1	
	IVB3	
	XIB	
239	VIIB	
	VIIC4a	
240	IIA1c	
	IIIA1	
	IIID	
	VIA	
241	IA1a	
	IIA1c	
242	IA1a	
	IA1b	
	IIIA1b	
243	IA1a	
	IIIA1b	
244	VA1	
	XIA	
245	IIA1c	
	IVC1	
	IVC2	

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Document Access Number	Subject Category	Additional Description
270	IA1b	
	IIIA1g	
271	IA1b	
	IA2b	
272	IIID	
	VIIE1	
273	VIA	
	VIID3	
274	IIIA1a	
	VIID2	
	VIID4	
275	IIA1c	Satellite h. fac.
	IIA1d	Satellite h. fac.
	III	Satellite h. fac.
	VA	Satellite h. fac.
	VIIB	Satellite h. fac.
276	IVA2	
	IVA4	
	VB	
277	IA	
	IIA2	
	VIID2	
278	IA1b	
	VIIC	
279	IIIA1c	
	VIID2	
280	IIIC1e	
	XIB	
281	VA1	
	VC1	
	VIID4	
282	IIA1d	Supply
	IIB1c	Supply
	IXA	
283	IIA1d	Supply
	IIB1d	Supply

Document Access Number	Subject Category	Additional Description
259	VC1	
260	IA1a	
	IA1b	
261	IIA	
	IIF	
	IIG1	
	IIG2	
	IIG5	
	IVC1	
	VA1	
	VIIE1	
	VIIE2	
262	VA	
	VIIB	
263	IIID	
	XIA	
264	IIA	
	IIID	
265	VIIB	
	XIA	
266	IA1a	
	IA1b	
	ID2a	
	IIA1b	
	IIA1c	
267	IVB1	
	VA1	
	XA	
268	IB1	
	IIB1	
	IIIB1c	
	IIID	
269	IIH	Mobile coronary care unit
	VIE	Mobile coronary care unit

0050

Document Access Number	Subject Category	Additional Description
293	IC1	
	IC2	
294	IIA2e	
	IIID	
	XA	
	XB	
295	IA1	
	VIIC1	
296	IIIB1a	
	XIB	
297	IA1a	
	IB1b	
	IIA1a	
	IIA1b	
298	IE5	
	VIID2	
299	IVA2a	
	IVA2b	
	IVA4	
	VIIB	
300	IIE2b	
	IIF5	
	IVA5b	
301	IB1	
	IIE1	Mental health
	IIF	
	VIIB	
302	IE4	Indian h. aids
	IVA5e	Nutrition education
303	IA1a	Supply
	IA2a	Supply
	IA3a	
	IB1a	
	IB2a	
	IB3a	
	IC1a	

Document Access Number	Subject Category	Additional Description
283	IXA	
284	IVB1	
	XIB	
285	IA1a	
	IA2a	
	IA3a	
	IB1a	
	IB2a	
	IB3a	
	IC1a	
	IC2a	
	IE	
	IIA1d	Supply
	IIA2d	Supply
	IIA3d	Supply
	IIB1d	Supply
	IIB2d	Supply
	IIB3d	Supply
	IIE	Supply
286	IIA1c	
	IIA2c	
287	VIIA	
	IXB	
	XIA	
	XIB	
	XIC	Systems approach applications
288	IA1a	
	VA1	
289	IA2a	Speech and hearing specialist
	IA2b	Speech and hearing specialist
290	IA1a	All personnel, planning policy
	IC1a	All personnel, planning policy
291	IIF3	
	IIF4	
292	IIIA1a	
	VIIB	

Document Access Number	Subject Category	Additional Description
315	IIIA1f	
	VIIE	
316	VIA5a	Mig. school h. prog.
	IXA	Mig. school h. prog.
317	ID	Post grad. ed.
	IIID	Post grad. ed.
318	IA1a	
	IA1b	
	IIIA1a	
	IIIA1b	
319	IIIC	
	IIID	
	IIIE	Family planning
	VIA	
320	VIIC	
	XIA	
321	IA1a	
	IA2a	
	IA3a	
	IB1a	
	IB2a	
	IB3a	
	IC1a	
	IC2a	
	IE	
	IIA1d	Supply
	IIA2d	Supply
	IIA3d	Supply
	IIB1d	Supply
	IIB2d	Supply
	IIB3d	Supply
	IIE	Supply

Document Access Number	Subject Category	Additional Description
303	IC2a	
	IE	
	IIA1d	Supply
	IIA2d	Supply
	IIA3d	Supply
	IIB1d	Supply
	IIB2d	Supply
	IIB3d	Supply
	IIE	Supply
304	IIIB1d	
	IIID	
305	IIIA1g	U. S. Public Health Service and Gillette Co.
	IXB	
306	IA1b	
	IIIA2e	University sponsored
307	IVA1a	
	VA	
	VIIC1d	
308	IIG3	
	IIID	
309	IIF	
	IIIA2e	Hospital
	IIID	
310	IAb	
	VIII	
311	IA1a	Phsyician assistants
	IA1b	
	XIA	
312	VA	
	VC	
313	VIID3	
	IXD	
314	IIB1	
	IIB2	

0052